

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A rotation angle sensing device comprising:

a ~~cylindrical~~ first magnetic member, which is made of a magnetic material and has a substantially cylindrical shape;

a second magnetic member, which has a substantially cylindrical shape and is disposed inside the ~~cylindrical~~ first magnetic member;

the second magnetic member being divided in a diametrical direction thereof into at least two portions which are spaced from each other by a magnetic detection gap;

at least one two magnetic sensing element elements, which is are disposed in the magnetic detection gap and fixed to the second magnetic member and detects detect magnetic force; and

at least one main magnet, which is fixed to the ~~cylindrical~~ first magnetic member and applies magnetic force to the magnetic sensing elements, the magnetic force being concentrated by the second magnetic member; wherein a relative rotation angle between the cylindrical magnetic member and the magnetic member is detected on the basis of magnetic force detected in the magnetic sensing element;

~~the rotation angle sensing device further comprising:~~

a supportive magnet which is arranged in the magnetic detection gap and disposed at an axial center portion of the second magnetic member to contact both the two portions of the second magnetic member, the supportive magnet being magnetized in the diametrical direction of the second magnetic member, a rotation angle of the supportive magnet which relative to the magnetic sensing element is being constant, and the magnetic sensing elements being symmetrical about a magnetization-direction axis of the supportive magnet; and

a magnetic concentration gap, which is formed between the cylindrical first magnetic member and the second magnetic member, an interval of the magnetic concentration gap becoming smaller in at least one part of the magnetic concentration gap in a predetermined direction,

wherein a relative rotation angle between the first magnetic member and the second magnetic member is detected on the basis of magnetic force detected by the magnetic sensing element.

2. (Currently amended) The rotation angle sensing device according to claim 1, wherein:

~~the cylindrical first~~ magnetic member is divided in its diametral direction and includes two magnet alignment gaps formed in divided parts thereof, ~~and the main magnet is disposed in each~~ the two magnet alignment gaps being respectively provided with the at least one main magnet therein;

~~the magnetic member is divided into at least two portions and has a magnetic detective gap formed in a divided part thereof, and the magnetic sensing element is disposed in the magnetic detective gap; and~~

the interval of the magnetic concentration gap becomes smaller from each magnet alignment gap toward a central part of each divided portion of the cylindrical first magnetic member.

3. (Currently amended) The rotation angle sensing device according to claim 1, wherein:

the magnetic force applied to the magnetic sensing element by the supportive magnet is not zero ~~vanished by virtue of the supportive magnet~~ when the magnetic force applied to the magnetic sensing element ~~only~~ by the main magnet only is vanished zero; and

the magnetic force applied to the magnetic sensing element is vanished zero when the magnetic sensing element and the main magnet are relatively rotated so that

changed strength of the magnetic force applied to the magnetic sensing element corresponds to strength of the magnetic flux applied to the magnetic sensing element by the supportive magnet.

4. (Original) The rotation angle sensing device according to claim 1, wherein maximum strength of the magnetic force applied to the magnetic sensing element by the main magnet is stronger than strength of the magnetic force applied to the magnetic sensing element by the supportive magnet.

5. (Original) The rotation angle sensing device according to claim 1, wherein the main magnet and the supportive magnet are permanent magnets having the same temperature characteristic.

6. (Original) The rotation angle sensing device according to claim 1, wherein the supportive magnet is disposed closely to the magnetic sensing element.

7. (Original) The rotation angle sensing device according to claim 1, wherein the supportive magnet applies magnetic force to the main magnet.

8. (Original) The rotation angle sensing device according to claim 1, wherein the supportive magnet forms magnetic field that is symmetrical with respect to a relative rotation axis between the magnetic sensing element and the main magnet.

9. (Currently amended) The rotation angle sensing device according to claim 1, wherein the supportive magnet is disposed on an axial end of the second magnetic member ~~in its axial direction~~.

Claim 10. (Canceled).

11. (New) A rotation angle sensing device comprising:
at least two magnetic sensing elements;
at least one main magnet, which applies magnetic force to the magnetic sensing elements;
a second magnetic member which has a substantially cylindrical shape to concentrate the magnetic force,
the second magnetic member being divided in a diametrical direction thereof into at least two portions which are spaced from each other by a magnetic detection gap; and
a supportive magnet, which is arranged in the magnetic detection gap and disposed at an axial center portion of the second magnetic member, the supportive magnet being magnetized in the diametrical direction of the second magnetic member, wherein:
the magnetic sensing elements are disposed in the magnetic detection gap and symmetrical about a magnetization-direction axis of the supportive magnet;
a rotation angle of the supportive magnet relative to the magnetic sensing element is constant; and
a relative rotation angle between the magnetic sensing element and the main magnet is detected on the basis of magnetic force detected by the magnetic sensing element.

12. (New) The rotation angle sensing device according to claim 11, further comprising
a first magnetic member, which is made of a magnetic material and has a substantially cylindrical shape, wherein:
the main magnet is fixed to the first magnetic member;
the second magnetic member is disposed inside the first magnetic member and spaced from the first magnetic member by a magnetic concentration gap, which becomes narrow in at least one part thereof in a predetermined direction; and

the supportive magnet contacts all said portions of the second magnetic member.